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Aharon J Agranat

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EXAMINER

LI, SHI K

ART UNIT

PAPER NUMBER

2613

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/542,923	<b>Applicant(s)</b> AGRANAT, AHARON J	
	<b>Examiner</b> Shi K. Li	<b>Art Unit</b> 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 2, 14, 22-29, 40 and 41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-13, 15-21, 30-39 and 42-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 44-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 44 recites the limitation “deflecting a predetermined portion of said light propagations toward a different of said plurality of optical-switch units” in lines 9-10 of the claim. Instant specification does not describe the limitation in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

### ***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1, 5-7, 10 and 43-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (U.S. Patent 6,782,210 B1) in view of Pesach et al. (B. Pesach et al., “Free-Space Optical Cross-Connect Switch by Use of Electroholography”, Applied Optics, Vol. 39, No. 5, 10 February 2000).

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Regarding claims 1, 10 and 43-44, Okada et al. teaches in FIG. 10 a laser power grid comprising a plurality of laser 8a-8d, a laser distribution grid from the lasers toward wavelength converter 21a-21d, which are equivalent to optical-switch arrays of instant claim. Okada et al. teaches in FIG. 7 communication nodes that generate input signal to ports 1a-1d for controlling the optical gates within the wavelength converters. Okada et al. teaches in FIG. 3 and col. 2, lines 23-64 how to select the wavelength based on the destination node. The difference between Okada et al. and the claimed invention is that Okada et al. does not teach that the optical gates deflect light propagations. Pesach et al. teaches in FIG. 4 electroholographic (EH) switch which diffracts beams to an angle determined by the applied voltage. One of ordinary skill in the art would have been motivated to combine the teaching of Pesach et al. with the optical network of Okada et al. because EH switches are transparent to both the data-throughput rate and the communication protocol. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use EH switch, as taught by Pesach et al., in the optical network of Okada et al. because EH switches are transparent to both the data-throughput rate and the communication protocol.

Regarding claims 5-6, Pesach et al. teaches an electroholographic switch.

Regarding claim 7, Okada et al. teaches in FIG. 10 that the number of optical gates equals the number of wavelengths.

Regarding claims 45-47, Okada et al. teaches in FIG. 7 receivers 50.

Regarding claims 48-49, Okada et al. teaches in FIG. 3 and col. 2, lines 23-64 how to select the wavelength based on the destination node.

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5. Claims 8-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. and Pesach et al. as applied to claims 1, 5-7, 10 and 43-49 above, and further in view of Thomas (U.S. Patent 6,501,866 B2).

Okada et al. and Pesach et al. have been discussed above in regard to claims 1, 5-7, 10 and 43-49. The difference between Okada et al. and Pesach et al. and the claimed invention is that Okada et al. and Pesach et al. do not teach wavelength demultiplexer. Thomas teaches in FIG. 12 a wavelength distribution system comprising lasers 1202, WDM multiplexer 1212 and demultiplexer 1218. One of ordinary skill in the art would have been motivated to combine the teaching of Thomas with the modified optical network of Okada et al. and Pesach et al. because using multiplexing and demultiplexing technique reduces the number of fibers for the distribution and can easily be expanded to change the number of wavelengths. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiplexing and demultiplexing technique, as taught by Thomas, in the modified optical network of Okada et al. and Pesach et al. because using multiplexing and demultiplexing technique reduces the number of fibers for the distribution and can easily be expanded to change the number of wavelengths.

Regarding claims 11-12, Thomas teaches in FIG. 5 fixed wavelength lasers and in FIG. 12 tunable CW lasers.

6. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al., Pesach et al. and Thomas as applied to claims 8-9 and 11-12 above, and further in view of Official Notice.

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Okada et al., Pesach et al. and Thomas have been discussed above in regard to claims 8-9 and 11-12. The difference between Okada et al., Pesach et al. and Thomas and the claimed invention is that Okada et al., Pesach et al. and Thomas do not teach whether the fiber is single mode or multi-mode. However, the use of single mode or multi-mode fiber for transmission of optical signal and is well known in the art and the combination of using any type of fiber with the modified optical network of Okada et al., Pesach et al. and Thomas would have yielded predictable results for one of ordinary skill in the art at the time of the invention. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use single mode or multi-mode fiber in the modified optical network of Okada et al., Pesach et al. and Thomas.

7. Claims 13, 15, 18-21, 32-34, 37 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. and Pesach et al. as applied to claims 1, 5-7, 10 and 43-49 above, and further in view of Anderson (U.S. Patent 5,999,291).

Okada et al. and Pesach et al. have been discussed above in regard to claims 1, 5-7, 10 and 43-49. The difference between Okada et al. and Pesach et al. and the claimed invention is that Okada et al. and Pesach et al. do not teach optical modulators which are electronically modulated. Anderson teaches in FIG. 1 a wavelength distribution system wherein each wavelength is coupled to a modulator 253 which is modulated by an electrical signal generated by the O/E converter. The Examiner notes that the transponder 263 of Anderson is equivalent to the wavelength converter of Okada et al. One of ordinary skill in the art would have combined the teaching of Anderson with the modified optical network of Okada et al. and Pesach et al. because the modification is a simple substitution of a known, equivalent element for another to

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obtain predictable results. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a electrical signal for modulating a modulator, as taught by Anderson, in the modified optical network of Okada et al. and Pesach et al. because the modification is a simple substitution of a known, equivalent element for another to obtain predictable results.

8. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al., Pesach et al. and Anderson as applied to claims 13, 15, 18-21, 32-34, 37 and 42 above, and further in view of Official Notice.

Okada et al., Pesach et al. and Anderson have been discussed above in regard to claims 13, 15, 18-21, 32-34, 37 and 42. The difference between Okada et al., Pesach et al. and Anderson and the claimed invention is that Okada et al., Pesach et al. and Anderson do not teach CWDM and DWDM. Official Notice is taken that both the concept and the advantages of using either dense WDM or coarse WDM in optical communication system are well known and expected in the art. It would have been obvious to use either dense WDM or coarse WDM depending on the number of wavelengths. For example, if only four wavelengths are needed, one may use coarse WDM. On the other hand, if 32 or more wavelengths are needed, one may use dense WDM.

9. Claims 35-36 and 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al., Pesach et al. and Anderson as applied to claims 13, 15, 18-21, 32-34, 37 and 42 above, and further in view of Thomas (U.S. Patent 6,501,866 B2).

Okada et al., Pesach et al. and Anderson have been discussed above in regard to claims 13, 15, 18-21, 32-34, 37 and 42. The difference between Okada et al., Pesach et al. and

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Anderson and the claimed invention is that Okada et al., Pesach et al. and Anderson do not teach wavelength demultiplexer. Thomas teaches in FIG. 12 a wavelength distribution system comprising lasers 1202, WDM multiplexer 1212 and demultiplexer 1218. One of ordinary skill in the art would have been motivated to combine the teaching of Thomas with the modified optical network of Okada et al., Pesach et al. and Anderson because using multiplexing and demultiplexing technique reduces the number of fibers for the distribution and can easily be expanded to change the number of wavelengths. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiplexing and demultiplexing technique, as taught by Thomas, in the modified optical network of Okada et al., Pesach et al. and Anderson because using multiplexing and demultiplexing technique reduces the number of fibers for the distribution and can easily be expanded to change the number of wavelengths.

Regarding claims 38-39, Thomas teaches in FIG. 5 fixed wavelength lasers and in FIG. 12 tunable CW lasers.

10. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al., Pesach et al., Anderson and Thomas as applied to claims 35-36 and 38-39 above, and further in view of Official Notice.

Okada et al., Pesach et al., Anderson and Thomas have been discussed above in regard to claims 35-36 and 38-39. The difference between Okada et al., Pesach et al., Anderson and Thomas and the claimed invention is that Okada et al., Pesach et al., Anderson and Thomas do not teach whether the fiber is single mode or multi-mode. However, the use of single mode or multi-mode fiber for transmission of optical signal and is well known in the art and the



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combination of using any type of fiber with the modified optical network of Okada et al., Pesach et al., Anderson and Thomas would have yielded predictable results for one of ordinary skill in the art at the time of the invention. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use single mode or multi-mode fiber in the modified optical network of Okada et al., Pesach et al., Anderson and Thomas.

***Response to Arguments***

11. Applicant's arguments with respect to claims 1, 3-13, 15-21, 30-39 and 42-49 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (6:30 a.m. - 4:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on 571 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl  
21 July 2009

/Shi K. Li/  
Primary Examiner, Art Unit 2613